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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/699,184

10/31/2003

Noah C. Lassar

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11/08/2005

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EXAMINER

DO, AN H

ART UNIT

PAPER NUMBER

2853

DATE MAILED: 11/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/699,184	LASSAR ET AL.	
	Examiner	Art Unit	
	An H. Do	2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-45 is/are pending in the application.
 4a) Of the above claim(s) 41-45 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, 6, 13-17, 25-30 and 35-38 is/are rejected.
- 7) ☒ Claim(s) 4, 7-12, 18-24, 31-34, 39 and 40 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>4/7/05&8/25/05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

The Response to Election/Restriction Requirement filed on 20 September 2005 has been acknowledged.

Election/Restrictions

1. Applicant's election with traverse of Species F, claims 1-40 in the reply filed on 20 September 2005 is acknowledged. The traversal is on the ground(s) that all species (A-F) should be examined without examiner's "serious burden." This is not found persuasive because at least claims 41-45 relate to a "independent and distinct" invention and hence, it is proper to restrict these claims.
2. Claims 41-45 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 20 September 2005.

Information Disclosure Statement

3. The information disclosure statements (IDS) submitted on 07 April 2005 and 25 August 2005 were filed and are being considered by the examiner.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-3, 5, 6, 13, 25-30 and 35-37 are rejected under 35 U.S.C. 102(b) as being anticipated by Scheffelin et al (US 6,394,580).

Scheffelin et al disclose in Figures 4-7 the following claimed features:

Regarding claim 1, a fluid ejection device (12) for receiving a signal and ejecting fluid in response thereto, comprising: an ink ejecting nozzle layer (47) having a substrate (multi-layer substrate 34) with first (top surface) and second (side surface) surfaces joined along an edge; an insulating feature (Figure 7, 74) located on the first surface adjacent the edge; and a flexible lead (68) that bends around the edge and lies flush against the insulating feature (Figure 6).

Regarding claims 2 and 13, further comprising a primer layer of an insulating material (74), which lies between the substrate (34) and the nozzle layer (47) to define the insulating feature (74).

Regarding claim 3, wherein: the primer layer defines a firing chamber (Figure 4, chamber 473) around a firing element (Figure 4, firing resistor 48); and the firing chamber (473) is configured in fluidic communication with the nozzle layer (Figure 4).

Regarding claims 5 and 6, wherein a portion of the flexible lead has a narrowed cross-section which defines a weakened area (Figure 6, an area inside the bending loop of 68), the flexible lead (69) bent at the weakened area such that another portion of the flexible lead (68) lies flush against the insulating feature.

Regarding claim 25, a fluid ejection device (12), comprising: means (nozzle layer 47) for defining a nozzle (472); means (multi-layer 34) for supporting the means (47) for defining; means (Figure 4, firing resistor 48) for ejecting fluid from the nozzle (472) in

response to a firing signal; means for receiving (leads 68) the firing signal; and means for insulating (Figure 7, 74) the means for receiving from the means for supporting, wherein the means for receiving (68) lies flush against the means for insulating (Figure 6).

Regarding claim 26, wherein the means for supporting (multi-layer 34) comprises first (top surface) and second (side surface) surfaces joined along an edge, the means for insulating (74) is located on the first surface along the edge and the means for receiving bends around the edge (Figure 6).

Regarding claim 27, wherein the means for insulating projects above the first surface (Figures 6 and 7).

Regarding claim 28, wherein the means for defining for defines a firing chamber (Figure 4, chamber 473) within which the means for ejecting is located, with the firing chamber (473) being in fluidic communication with the nozzle (472).

Regarding claim 29, wherein the means for insulating (74) also insulates the means for defining (Figure 6) from the means for supporting (34).

Regarding claim 30, wherein the means for receiving (leads 68) further comprises means for bending the means for receiving at a selected location (Figure 6).

Regarding claim 35, a method of insulating a flexible lead (68) from a substrate (34) in a fluid ejection device (12) which ejects fluid from a nozzle (472) in response to a signal received through the flexible lead (68), the method comprising: providing the substrate (34) having first (top surface) and second (side surface) surfaces joined along an edge; coupling the flexible lead (68) to a firing element (Figure 4, firing resistor 48)

associated with the nozzle (472) and responsive to the firing signal; insulating the flexible lead (68) from the substrate (34) via an insulating feature (74) supported by the first surface adjacent to the edge; and routing the flexible lead (68) flush against the insulating feature (Figure 6).

Regarding claim 36, further comprising bending the flexible lead (68) around the edge to run substantially in parallel with the second surface (Figure 6).

Regarding claim 37, further comprising weakening an area (an area inside the bending loop of 68) of the flexible lead (68) and bending the flexible lead (68) at the weakened area.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 14-17 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scheffelin et al (US 6,394,580) in view of Daggs et al (US 5,422,667).

Scheffelin et al disclose the claimed invention except for reciting the edge is a non-rectangular shape having a beveled surface, a notched out section or a stepped surface joining together the first and second surfaces which are not substantially orthogonal.

Daggs et al teach in Figures 1 and 2 the edge is a non-rectangular shape having a beveled surface, a notched out section or a stepped surface (a top cutout section of

12 and 28) joining together the first (12) and second (28) surfaces which are not substantially orthogonal.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include a non-rectangular shaped edge having a notched out section, as taught by Daggs et al, for the purpose of providing a location for electrical interconnects.

Allowable Subject Matter

8. Claims 4, 7-12, 18-24, 31-34, 39 and 40 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

The primary reason for the allowance of claim 4 is the inclusion of the limitation of a fluid ejection device for receiving a signal and ejecting fluid in response thereto that includes a raised, encompassing hedgerow defining the insulating feature, the hedgerow having an exit wall, a rear wall, and two opposing sidewalls, the hedgerow surrounding a bondpad located adjacent to the insulating feature and coupled to a firing element. It is this limitation found in the claims, as it is claimed in the combination of, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

The primary reason for the allowance of claim 7 is the inclusion of the limitation of a fluid ejection device for receiving a signal and ejecting fluid in response thereto that

includes a flexible lead bending around the edge and lies flush against the insulating feature, the lead has a rectangular cross-section with a pair of opposing first and second surfaces, the weakened area is formed by two opposing notched areas defined by the first and second surfaces and the first surface lies flush against the insulating feature. It is this limitation found in the claims, as it is claimed in the combination of, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

The primary reason for the allowance of claim 8 is the inclusion of the limitation of a fluid ejection device for receiving a signal and ejecting fluid in response thereto that includes a flexible lead bending around the edge and lies flush against the insulating feature, the lead has a rectangular cross-section with a pair of opposing first and second surfaces, and a pair of opposing third and fourth surfaces, the weakened area is formed by two opposing notched areas defined by the first and second surfaces and the first surface lies flush against the insulating feature. It is this limitation found in the claims, as it is claimed in the combination of, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

The primary reason for the allowance of claims 9-12 is the inclusion of the limitation of a fluid ejection device for receiving a signal and ejecting fluid in response thereto that includes a weakened area located at a void in the flexible lead. It is this limitation found in the claims, as it is claimed in the combination of, that has not been

found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

The primary reason for the allowance of claims 18 and 19 is the inclusion of the limitation of a fluid ejection device for receiving a signal and ejecting fluid in response thereto that includes a primer layer of an insulating material having plural perforations therethrough adjacent the edge. It is this limitation found in the claims, as it is claimed in the combination of, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

The primary reason for the allowance of claims 20-24, 34 and 40 is the inclusion of the limitation of a fluid ejection device for receiving a signal and ejecting fluid in response thereto that includes a wall structure defining an open compartment that partially encloses a bondpad disposed on the substrate adjacent to the insulating feature; and an encapsulant disposed in the open compartment so as to encapsulate the flexible lead therein. It is this limitation found in the claims, as it is claimed in the combination of, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

The primary reason for the allowance of claims 31, 32, 34 and 39 is the inclusion of the limitation of a fluid ejection device that includes means for supporting having a clean cut edge along which the means for insulating is located and means for controlling cracking of the means for insulating adjacent the clean cut edge. It is this limitation found in the claims, as it is claimed in the combination of, that has not been found,

taught or suggested by the prior art of record which makes these claims allowable over the prior art.

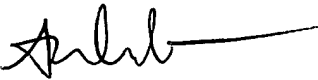
9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Feinn et al (US 6,428,145) disclose a printhead assembly comprising a multi-layer substrate having flexible bending leads on top surface of the substrate. Keefe et al (US 5,278,584) disclose an ink cartridge having flexible bonding circuit around the edge of the cartridge. Drake (US 5,160,945) discloses a pagewidth printhead having a plurality of wire bonds disposed on the first and second surfaces.

Contact Information

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to An H. Do whose telephone number is 571-272-2143. The examiner can normally be reached on Monday-Friday (Flexible).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on 571-272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'An H. Do', followed by a long horizontal stroke.

An H. Do
November 4, 2005